

4/10/04

FULLY ADJUSTABLE STOCK FOR RIFLE.

10 The present invention relates to a stock for rifle which can be fully adjusted both vertically and laterally and, by means of appropriate thicknesses of the butt plates, also in length.

15 Stocks for rifles are known on the market, above all in relation to the world of precision or sport shooting, which are known as "adjustable" due to the possibility of partially adjusting the shape of the stock, improving the support provided for the shooter during shooting.

20 This is because shooters have different physiques which affect the shooting position, in particular the various physical characteristics of the arm, of the position of the eyes and of the cheekbones affect the aim. In the man-rifle interaction, aim refers to the alignment between the eye, the shoulder and the line of aim of the rifle: clearly, when producing a rifle stock, account has to be taken of a set of parameters such as distance and height of eyes, position of the
25 cheekbones and the extent of their projection, the length of the neck, the position of the shoulder whereon the rifle is rested, and the length of the arms and height of the person.

30 These elements are fundamental in the choice of the stock in order to achieve high precision of shooting, in particular in the case of shooting at a moving target for sport, or of marksmen.

The so-called "adjustable" stocks known on the market in actual fact only allow partial adjustments as only part of the stock can be regulated, unlike what is to be illustrated of the present invention herein below.

The most representative patent of the known state of the art is FR 2791767 wherein the part formed by the back, i.e. the upper part of the stock, and by part of the lateral surface of the stock, can be moved both laterally and vertically by means of micrometric screws, only altering the support provided by the stock for the shooter, yet maintaining the alignment between the end of the stock and the barrels of the rifle steady.

Another patent belonging to the known state of the art is US 5235764: only the back can be moved both vertically and laterally, but in this case too the alignment between the barrels of the rifle and the stock end is maintained.

Systems are also known for adjustment of the butt plate, by moving it vertically or moving it away from the stock by means of spacers or pins.

In none of the patents which belong to the state of the art is the axis between the point of resting of the stock on the shoulder and the barrels of the rifle modified: the so-called "adjustment" therefore consists of a relative increase in the comfort for the shooter yet while maintaining alignment of the rifle: in practice adaptability of the shooter to the rifle is favoured, and not the reverse.

The object therefore of the present invention is that of producing a stock which can be fully adjusted and adapted to the shooter, in such a way that perfect alignment of the aim on the target to be hit can be achieved, with a lower likelihood of error on the same target.

A further object of the present invention is that of simplifying the production of the stocks: today's production method is in fact that of producing the stocks in different sizes with an increase in costs and a further complication, as for each model of rifle numerous sizes of stocks have to be produced to satisfy customers who obviously have heterogeneous physiques.

10 Last but not least, the production of the stock according to the present invention enables a saving in materials, above all wood, and a considerable decrease in costs, improving the efficiency of production.

15 The advantages lie therefore in the fact that with a single rifle the needs of people with different physiques can be satisfied, enabling them to adjust their own firearm in the manner most congenial to them without having to level off projections or, worse, change their natural shooting position to adapt better to the rifle.

20 Thus a rifle is obtained which adapts to the person and not the reverse.

25 A further advantage achieved, as will be illustrated herein below, is absorption of the recoil by the stock forming the object of the present invention, as it is no longer a rigid single part but is instead formed by two joined elements: the system which joins the two elements introduces a restraint which increases the elasticity of the body and therefore encourages absorption of the recoil which is not transferred directly to the shoulder but is damped by the connection system.

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These and other advantages will be made clearer by the description and by the accompanying drawings of a preferred embodiment.

Fig. 1 illustrates the complete stock as it is presented.

Fig. 2 shows the elements which form the stock and the system of connection of the elements.

Fig. 3 is a view from above of how the stock is presented perfectly in line with the barrels.

10 Fig. 4 shows the various types of butt plate which can be attached to the end of the stock to adapt the rifle in a longitudinal direction.

Referring to Figure 1, the stock is formed by the union of two elements wherein element 1 is integral with the breechblock 3 of the
15 rifle and therefore with the barrels, while element 2 rests on the shoulder of the shooter. On element 2 the nose 4, the heel 5, the tip 6 and, in contact with the shoulder, the butt plate 7, can be seen.

As is clear, the stock consequently appears divided also from a
20 structural point of view: from a rigid body formed by a single piece of wood as it was originally, it becomes a body formed by two separate elements joined to each other and with different tasks and functions: the union of these two elements forms the actual stock.

25 Moving on to Figure 2, the elements 1 and 2 are joined to each other by means of pins 8, whose ends are attached to the elements 1 and 2 by means of plates 9 which are embedded in either one of the elements forming the stock as described above. Said plates can regulate micrometrically the position of the ends of the pins 8 in a
30 transverse direction to the stock, as said ends are attached to a worm screw.

In a preferred embodiment, regulation of the horizontal movement of element 1 in relation to element 2 therefore takes place with micrometric regulation of the position of the pins 8 by actuating the screws 10 which move the point of attachment of the pin in a transverse direction, enabling translation (moving both pins 8 in the same direction) or rotation (modifying the position of the pins 8 in opposite directions or adjusting only one thereof) of one element in relation to the other.

10 Vertical adjustment instead takes place both by actuating the screws 12 which regulate the height of the pins and therefore the vertical position of the elements, and by inserting shims between the two elements.

15 Referring to Figure 3, some examples of possible positions which element 2 can adopt in relation to element 1 are illustrated: as can easily be seen, both translations of the whole part and partial relative rotations both in relation to the front pin, with the nose 4 still and the heel 5 moved, and in relation to the rear pin, where vice versa the
20 heel 5 remains still and the nose 4 moves, are possible.

For longitudinal adjustment of the stock, different butt plate sizes are used, as illustrated in Fig. 4: the system of attachment of the butt is by bayonet coupling of the attachment holes 13 on special pins
15 formed in the end part of the stock.

Adjustment takes place with replacement of the butt plate with others 7', 7'', 7''' of different thickness which allow optimal adaptation in a longitudinal direction of the rifle to the shooter.

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As can be seen from the drawings and from the description, not only does the appearance of the stock vary but also the general alignment of the rifle with the body of the shooter: a longitudinal

variation with the butt plate and a vertical and horizontal variation are obtained by adjusting the connection pins which adapt the rifle itself to the shooter.

The fact that the stock is no longer a rigid element but is instead composed of two parts introduces elasticity into the same which damps the recoil caused by the shot: although the pins are sufficiently rigid to allow the precision of the aim on the target to be maintained, they will never be infinitely rigid and this allows a
10 damping element to be obtained.

It is understood that all that is described above is purely a non-limiting description of the different possible embodiments of the invention.